


What is claimed is:

1. A method of installing a filter cartridge into an air cleaner housing; the method including steps of:
  - (a) providing a filter cartridge comprising:
    - (i) a z-filter media construction comprising a fluted sheet secured to a facing sheet, and having opposite inlet and outlet flow faces;
    - (ii) a sheath positioned surrounding the z-filter media construction;
    - (iii) a seal arrangement comprising a rubber like material positioned to axially seal the filter cartridge inside of the housing;
    - (iv) a projection arrangement including projections extending outwardly from opposite sides of the sheath;
  - (b) providing an air cleaner housing with: first and second, opposite, ends; and a sidewall defining a top, a bottom and opposite sides; the housing sidewall including an access cover removable from a remainder of the housing;
  - (c) removing the access cover;
  - (d) inserting the filter cartridge through an access opening generated by removal of the access cover; the step of inserting including directing the projections extending outwardly from opposite sides of the sheath respectively toward the opposite sides of the housing; and
  - (e) sealing the filter cartridge in position and closing the housing by positioning the access cover in place; the step of sealing including:
    - (i) engaging the projections extending outwardly from opposite sides of the sheath with structure inside of the housing and biasing the filter cartridge against an end of the housing with the seal arrangement providing an axial seal between the filter cartridge and the housing; and
    - (ii) retaining biasing engagement between the housing and the filter cartridge, while the access cover is in position on the housing.

2. A method according to claim 1 wherein:
  - (a) the step of providing a filter cartridge includes providing:
    - (i) a z-filter media construction comprising a fluted sheet secured to a facing sheet and being coiled; the facing sheet being non-corrugated;
    - (ii) a sheath positioned surrounding the z-filter media construction and being an impermeable one-piece plastic sheath;
    - (iii) a projection arrangement including projections extending outwardly from opposite sides of the sheath; wherein the projection arrangement is integral with the one-piece plastic sheath;
  - (b) the step of providing an air cleaner housing includes providing an air cleaner housing with: a sidewall and first and second, opposite, ends; and a sidewall defining a top, a bottom and opposite sides; the housing sidewall including an access cover removable from a remainder of the housing; wherein the housing top includes the access cover; and
  - (c) the step of retaining biasing engagement between the housing and the filter cartridge, while the access cover is in position on the housing includes retaining biasing engagement between the housing and the filter cartridge, while the access cover is in position on a top of the housing.
3. The method according to claim 1 wherein:
  - (a) the step of sealing includes compressing the seal arrangement in thickness.
4. The method according to claim 3 wherein:
  - (a) the step of sealing includes compressing the seal arrangement at least 0.5 mm.
5. The method according to claim 1 wherein:

- (a) the step of closing includes a step of engaging the filter cartridge with projections on the access cover, to help secure the sheath in position.
- 6. The method according to claim 1 wherein:
  - (a) the step of sealing comprises sliding the filter cartridge within the housing, without rotating the filter cartridge.
- 7. The method according to claim 6 wherein:
  - (a) the step of providing a filter cartridge includes providing a z-filter media construction wherein the facing sheet is non-corrugated.
- 8. A method of installing a filter cartridge into an air cleaner housing; the method including steps of:
  - (a) providing a filter cartridge comprising:
    - (i) a z-filter media construction comprising a fluted sheet secured to a facing sheet, coiled and having opposite inlet and outlet flow faces;
    - (ii) an impermeable one-piece, plastic sheath positioned surrounding the z-filter media construction;
    - (iii) a seal arrangement comprising a rubber like material positioned to axially seal the filter cartridge inside of the housing;
    - (iv) a projection arrangement including projections extending outwardly from opposite sides of the sheath; the projection arrangement being integral with the one-piece plastic sheath;
  - (b) providing an air cleaner housing with: first and second, opposite, ends; and, a sidewall defining a top, a bottom and opposite sides; the housing top including an access cover removable from a remainder of the housing;
  - (c) removing the access cover;
  - (d) inserting the filter cartridge through an access opening generated by removal of the access cover; the step of inserting including directing the

- projections extending outwardly from opposite sides of the sheath respectively toward the opposite sides of the housing; and
- (e) sealing the filter cartridge in position and closing the housing by positioning the access cover in place; the step of sealing including:
- (i) engaging the projections extending outwardly from opposite sides of the sheath with structure inside of the housing and biasing the filter cartridge against an end of the housing with the seal arrangement providing an axial seal between the filter cartridge and the housing; and
  - (ii) retaining biasing engagement between the housing and the filter cartridge, while the access cover is in position on a top of the housing.
9. The method according to claim 8 wherein:
- (a) the step of sealing includes compressing the seal arrangement in thickness.
10. The method according to claim 9 wherein:
- (a) the step of sealing includes compressing the seal arrangement at least 0.5 mm.
11. The method according to claim 8 wherein:
- (a) the step of closing includes a step of engaging the filter cartridge with projections on the access cover, to help secure the sheath in position.
12. The method according to claim 8 wherein:
- (a) the step of sealing comprises sliding the filter cartridge within the housing, without rotating the filter cartridge.
13. The method according to claim 12 wherein:

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- (a) the step of providing a filter cartridge includes providing a z-filter media construction wherein the facing sheet is non-corrugated.